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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,341	11/18/2003	Takanori Nishio	16869K-040510US	8188

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EXAMINER

ROJAS, MIDYS

ART UNIT PAPER NUMBER

2185

DATE MAILED: 01/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/717,341

Applicant(s)

NISHIO ET AL.

Examiner

Midys Rojas

Art Unit

2185

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-12 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10, 11, 12, 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 10, 11, 12, and 21 have been considered but are not persuasive.

Applicant argues that Shorroff does not disclose detecting that a remaining amount of **its capacity to store data** has become less than a **predetermined value**. However, in determining that insufficient space in a target file, wherein the target file is the targeted file out of a data file 42, Shorroff is determining that its capacity to stored data has become less since the target file is available for his system's data storage. Additionally, the target file is part of the data files, which are part of Shorroff's storage system, see Figure 1.

Also, in determining that a remaining amount of its capacity to store data has become less than a predetermined value, Shorroff performs a comparison of the amount of data to be stored against the size of the target file. This is equivalent to detecting that the remaining amount is less than predetermined value since the value is predetermined to be equivalent to the size of the data to be stored.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 10, 11, 12, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoroff et al. (6,023,744) in view of Blumenau (6,631,442).

Regarding Claim 10, Shoroff discloses a method of operating a storage system wherein when a storage system detects that a remaining amount of its own storage area has become less than a predetermined value; wherein the predetermined value is prearranged to be that of the size of the processed data; a local storage area provided by the storage system is made available as said storage area (Column 10, lines 45-54) thus extending its available storage area. This system detects that a remaining amount of its own storage area has become less than a predetermined value by determining if certain processed data, whose size is of a predetermined value, will fit in the remaining space in the target file. If the space is not sufficient, additional disk space is requested from the file system in order to enlarge the target file (see Figure 12 and Column 4, lines 39-45). Shoroff does not teach performing a mount operation on one or more disk units so that a remote storage area may serve to extend the available storage area. Shoroff also doesn't teach using the size and speed (reading or writing) of said remote storage area to select the remote storage area to be used. Blumenau discloses the mounting of a remote volume for the purpose of making it available for use by a local storage system (See Column 2, lines 44-66). Blumenau additionally teaches retrieving a required volume's size (see Figure 3, step 303) and architecture specific access information (such as access speed, operating system, memory architecture) for use while configuring the remote volume's association (see Column 9, lines 45 – Column 10, lines 6; Column 10, lines 20- 44; Column 10, lines 57-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the storage system of Shoroff to include to mounting operation of Blumenau as well as the use of size and access information parameters for the selection of the remote storage volume to be used for memory extension. In allowing the system of Shoroff to seek additional storage space from

Art Unit: 2185

remote sites, the system can further expand its storage capacity without being limited to the storage that is available locally. In allowing the system of Shoroff to implement the use of size and access information parameters for the selection of the remote storage volume to be used for memory extension, the system can guarantee that the remote storage volume provided for expansion has enough space available to satisfy the storage needs of the local system and that the remote storage volume can be accessed at the same speed as local volumes (thus preventing the need to slower accessing times).

Regarding Claim 11, Shoroff discloses a method of operating a storage system wherein when a storage system detects that a remaining amount of its own storage area has become less than a predetermined value; wherein the predetermined value is prearranged to be that of the size of the processed data; a local storage area provided by the storage system is made available as said storage area (Column 10, lines 45-54) thus extending its available storage area. This system detects that a remaining amount of its own storage area has become less than a predetermined value by determining if certain processed data, whose size is of a predetermined value, will fit in the remaining space in the target file. If the space is not sufficient, additional disk space is requested from the file system in order to enlarge the target file (see Figure 12 and Column 4, lines 39-45). Shoroff discloses monitoring a utilization state of said additional (both remote and non remote) storage area for said storage system (Column 10, lines 45-54). Shoroff discloses determining whether or not said storage area in said storage system is to be increased is according to said utilization state. Shoroff determines if the processed data fits in the remaining space of the target file. Such a determination requires the monitoring of the used capacity of the target file as well as monitoring of the space available in the remote storage ("utilization state").

Art Unit: 2185

Referring to Figure 12, step 206 reads the used capacity of the target file, calculates how much empty space is remaining in the target file and then determines if the processed data fits into the target file. In step 208 a calculation is made as to how much of the remote storage is needed to fit the processed data in the target file and such storage amount is used to increase the target file (decide whether or not one or more spare disk units is to be used).

Shoroff does not teach performing a mount operation on one or more disk units so that a remote storage area may serve to extend the available storage area. Blumenau discloses the mounting of a remote volume for the purpose of making it available for use by a local storage system (See Column 2, lines 44-66). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the storage system of Shoroff to include to mounting operation of Blumenau. In allowing the system of Shoroff to seek additional storage space from remote sites, the system can further expand its storage capacity without being limited to the storage that is available locally. In combining the inventions of Shoroff with that of Blumenau, the resulting invention performs the use of the utilization state as taught by Shoroff by monitoring and using the utilization state of the remote storage area to be used for expansion.

Regarding Claim 12, Shoroff discloses a method of operating a storage system wherein when a storage system detects that a remaining amount of its own storage area has become less than a predetermined value; wherein the predetermined value is prearranged to be that of the size of the processed data; a local storage area provided by the storage system is made available as said storage area (Column 10, lines 45-54) thus extending its available storage area. This system detects that a remaining amount of its own storage area has become less than a predetermined value by determining if certain processed data, whose size is of a predetermined value, will fit in

Art Unit: 2185

the remaining space in the target file. If the space is not sufficient, additional disk space is requested from the file system in order to enlarge the target file (see Figure 12 and Column 4, lines 39-45). Shoroff does not teach performing a mount operation on one or more disk units so that a remote storage area may serve to extend the available storage area or copying data stored in the remote storage system to the storage area of the local storage system when the local storage system is enlarged. Blumenau discloses the mounting of a remote volume for the purpose of making it available for use by a local storage system (See Column 2, lines 44-66). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the storage system of Shoroff to include to mounting operation of Blumenau. In allowing the system of Shoroff to seek additional storage space from remote sites, the system can further expand its storage capacity without being limited to the storage that is available locally. Blumenau also discloses the local storage system (host) accessing the remote storage system for the purposes of memory expansion via an associated identifier allowing access to the remote volume as a regular volume of data storage (Column 19, lines 20-35). Since the remote storage volume can be accessed as a local storage volume through the identifier, it has basically become part of the local storage system, in doing so, the data that is stored in the remote storage volume has essentially been “copied” over to be part of the local storage system. In combining the inventions of Shoroff with that of Blumenau, the resulting invention performs the remote storage access as done by Blumenau and therefore essentially “copies” the data in the remote storage system over to be part of the local storage system.

Regarding Claim 21, Shoroff discloses a method of operating a storage system wherein when a storage system detects that a remaining amount of its own storage area has become less

Art Unit: 2185

than a predetermined value; wherein the predetermined value is predetermined to be that of the size of the processed data; a local storage area provided by the storage system is made available as said storage area (Column 10, lines 45-54). This system detects that a remaining amount of its own storage area has become less than a predetermined value by determining if certain processed data, whose size is of a predetermined value, will fit in the remaining space in the target file. If the space is not sufficient, additional disk space is requested from the file system in order to enlarge the target file (see Figure 12 and Column 4, lines 39-45). Shoroff does not teach performing a mount operation on one or more disk units so that a remote storage area may serve to extend the available storage area or storing a correspondence between a port ID and a disk identifier. Blumenau discloses the mounting of a remote volume for the purpose of making it available for use by a local storage system (See Column 2, lines 44-66). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the storage system of Shoroff to include to mounting operation of Blumenau. In allowing the system of Shoroff to seek additional storage space from remote sites, the system can further expand its storage capacity without being limited to the storage that is available locally. Blumenau also discloses storing a correspondence between a port (label manager, serving as a port between the host and the remote volume from within the channel director 102) and a disk identifier (122), thus allowing for the direct access from the host through the use of the disk ID (see Figures 7 and 2, Columns 9, line 62- Column 10, line 6; Column 26, lines 1-12). In combining the inventions of Shoroff with that of Blumenau, the resulting invention performs the remote storage access as done by Blumenau and therefore also accesses the remote storage via the disk identifier.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Midys Rojas whose telephone number is (571) 272-4207. The examiner can normally be reached on M-F 5:30am - 4:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2185

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Midys Rojas
Examiner
Art Unit 2185

MR


MANO PADMANABHAN 1/9/05
SUPERVISORY PATENT EXAMINER